

REMARKS/ARGUMENTS

Reconsideration and allowance of the subject application are respectfully requested.

All claims 1-51 stand rejected under 35 USC §103(a) as being unpatentable over WO 99/57819 in view of EP 0853389 A2. This rejection is respectfully traversed.

The '819 reference, commonly assigned to Ericsson, fails to teach all of the features of the independent claims. For example, claim 1 recites "determining an adjustment signal to reduce the delay error taking into account a Doppler effect associated with the received signal." The Examiner contends that the '819 reference teaches this quoted feature, arguing "the movement of the station can be a factor in the adjustment of errors in (see page 3 lines 54-6)." Presumably the Examiner is referring to page 3, lines 4-6, which state: "the searcher also tracks changing propagation conditions resulting from movement of the mobile station or some other object associated with one of the multipaths to adjust the extracted delays accordingly." This text teaches that propagation conditions may change with mobile movement. It does not teach reducing delay error taking into account a Doppler effect associated with the received signal.

The '819 reference calculates the delay error in equation (3) on page 19. Although there is a discussion of an adjustment signal on pages 20-22, this adjustment signal relates to a noise filtering process. Specifically, successive delay spreads are calculated and a difference is determined therebetween. The adjustment signal is set equal to the delay error signal if the delay spread difference is less than or equal to a threshold.

Alternatively, the adjustment signal is set to zero if the delay spread difference is greater than the threshold. There is no teaching or suggestion in either the filtering or with the adjustment signal to “reduce the delay error taking into account a Doppler effect associated with the received signal.” The adjustment signal in the ‘819 reference is either set equal to zero or equal to the delay error. There is no intermediate adjustment to the delay error. More importantly, there is no teaching in the ‘819 reference of taking into account a Doppler effect associated with the received signal. All searchers track changing propagation conditions. Otherwise, they would not be performing the basic searcher function. Applicants find no teaching, and the Examiner has provided no explicit reference to such a teaching, in the ‘819 reference of determining a Doppler effect associated with a received signal -- let alone using such a Doppler effect to adjust the delay error between the mean CIR delay and a desired delay position of a search window. The fact that the ‘819 reference recognizes that mobile station movement may change the radio propagation path is not the same thing as a teaching of “determining an adjustment signal to reduce the delay error taking into account a Doppler effect associated with the received signal.”

Sensing the weakness in a rejection based on the ‘819 reference, the Examiner turns to the ‘389 reference and relies in particular on page 1. Page 1 simply describes a terminal unit that uses a RAKE receiver with a searcher. Perhaps the Examiner was referring to column 1 of page 2. But all that is mentioned in this column is a brief general description of CDMA, FDMA and TDMA. Applicants request that the Examiner identify

specific column and line numbers in the '389 reference which disclose what the Examiner alleges is taught, i.e., "a rake receiver which applies Doppler effect adjustment to reduce fading or noise interference." Applicants can find no teaching in the searcher methodology employed by the '389 reference of the quoted claim recitation above relating to taking into account a Doppler effect associated with the received signal.

Thus, even if the combination of the '819 and the '389 references could be made, for purposes of argument only, that combination still fails to disclose the following claim features:

- determining a Doppler frequency for the received signal
- calculating an adjustment signal to reduce the delay error taking into account a relative movement between the receiver and the transmitter and the determined Doppler frequency.

Claim 25 recites "a controller configured to determine a position of a search window used to locate the channel impulse response that takes into account a Doppler effect on transmitted signals." The radio base station of claim 39 recites "a Doppler frequency estimator configured to estimate a Doppler frequency," and a "window tracking unit configured to maintain alignment between the CIR for each channel estimator and a target position of the channel estimator's corresponding search window using the determined Doppler frequency." None of these features from claim 25 or claim 39 is found in the applied references.

Neither reference applied by the Examiner recognizes the problem identified and solved by the present invention. It is well established by the Federal Circuit that the

problem confronted by the inventor must be considered in determining whether it would have been obvious to combine references in order to solve that problem. See *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931 (Fed. Cir. 1990). In contrast to these references applied by the Examiner, the instant inventors recognized that both slow fading and fast fading are particularly troublesome when trying to keep the channel impulse response within the search window. A fade can cause one of the delayed paths in the search window to disappear. Naturally, the window tracking unit responds by adjusting the position of the search window, often significantly, based on the assumption that this faded path no longer exists. But that assumption is typically wrong because the faded path very often reappears. If the search window is adjusted too rapidly, it may be badly aligned when the faded path reappears.

Absent a recognition of this problem, there is no other plausible reason that the Examiner has provided from the prior art why either applied reference would be modified to determine and then take into account a Doppler effect associated with the received signal with respect to adjusting the delay error between the mean channel impulse response delay position and a desired delay position. Lacking a teaching in the '819 and '389 references of all the features recited in the independent claims and an appreciation in either of these references of the significant problems addressed and solved by the present inventors, the obviousness rejection is improper and should be withdrawn.

The Examiner fails to address in any meaningful way the dependent claim features and makes only a vague reference to the '819 disclosure. If the Examiner elects to

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maintain this rejection, Applicants respectfully request that the Examiner specifically identify where each element of each of the following dependent claims is described in the '819 reference using specific page and line numbers for each claim element: 3-8, 11-13, 15-22, 26-36, 40, 41, 45-50. For example, the Examiner fails to identify where the '819 patent discloses that the maximum Doppler frequency is expressed as a minimum dwell time (MDT).

The application is in condition for allowance. An early notice to that effect is earnestly solicited.

Respectfully submitted,

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